

We claim:

1. An engine exhaust emission control device comprising:

an addition device for adding a NOx reducing agent to exhaust gas of an engine;

a first controller configured to be in association with the addition device; and

a second controller configured to be in association with the engine, for setting an engine control factor that influences the composition of exhaust gas at the point in time of emission from a cylinder, wherein . .

the first controller detects an abnormality that occurs in the addition device as a first abnormality, and at the time of a first abnormality occurrence when the occurrence of this first abnormality is detected, outputs to the second controller, an engine control signal for making a NOx emission amount of the engine vary from that at normal times, other than at the time of the first abnormality occurrence, under the same operating conditions of the engine.

2. An engine exhaust emission control device according to claim 1, wherein the first controller controls the addition device, and

the second controller detects an abnormality that occurs in an engine part for realizing the engine control factor as a second abnormality, and at the time of a second abnormality occurrence when the occurrence of this second abnormality is detected, outputs to the first controller, an addition device control signal for making a reducing agent addition amount by the addition device vary from that at normal times, other than at the time of the second abnormality occurrence and the first abnormality occurrence.

3. An engine exhaust emission control device according to claim 2, wherein the first controller receives the addition device control signal and reduces the reducing agent addition amount corresponding to a reduction in the NO<sub>x</sub> emission amount related to the second abnormality, and increases the reducing agent addition amount corresponding to an increase in the NO<sub>x</sub> emission amount related to the second abnormality.
4. An engine exhaust emission control device according to claim 2, wherein the engine includes as the engine part, an exhaust gas recirculation device which recirculates exhaust gas to an intake air passage,  
and the second controller detects as the second abnormality, an abnormality occurring in the exhaust gas recirculation device.
5. An engine exhaust emission control device according to claim 2, wherein the engine includes as the engine part, a supercharger which compresses intake air,  
and the second controller detects as the second abnormality, an abnormality occurring in the supercharger.
6. An engine exhaust emission control device according to claim 1, wherein the first controller outputs an engine control signal for reducing the NO<sub>x</sub> emission amount of the engine to less than at normal times, at the time of the first abnormality occurrence.
7. An engine exhaust emission control device according to claim 6, wherein the first controller stops addition of the reducing agent by the addition device, along with outputting of the engine control signal.

8. An engine exhaust emission control device according to claim 1, wherein the addition device comprises; a tank for storing an aqueous solution of the NO<sub>x</sub> reducing agent or a precursor thereof, and an injection nozzle disposed on an exhaust passage of the engine, the injection nozzle injecting the reducing agent or precursor aqueous solution stored in the tank, to add the NO<sub>x</sub> reducing agent to the exhaust gas.

9. An engine exhaust emission control device according to claim 8, wherein urea water is stored in the tank.

10. An engine exhaust emission control device according to claim 1, further comprising a first sensor for detecting a concentration of the reducing agent or a precursor contained in the reducing agent or precursor aqueous solution stored in the tank, and

the first controller detects as the first abnormality, a situation where a value of the concentration detected by the first sensor deviates from a predetermined range.

11. An engine exhaust emission control device according to claim 8, further comprising a second sensor for detecting a residual amount of the reducing agent or precursor aqueous solution stored in the tank, and

the first controller detects as the first abnormality, a situation where a value of the residual amount detected by the second sensor is less than a predetermined value.

12. An engine exhaust emission control device comprising:  
an addition device for adding a NO<sub>x</sub> reducing agent to exhaust gas of an engine;

a first controller for controlling the addition device; and  
a second controller configured to be in association with the engine, wherein  
the second controller detects an abnormality that occurs in an engine part that  
influences the composition of exhaust gas at the point in time of emission from a cylinder,  
and at the time of an abnormality occurrence when the occurrence of this abnormality is  
detected, outputs to the first controller, an addition device control signal for making a  
reducing agent addition amount by the addition device vary from that at normal times, other  
than at the time of the abnormality occurrence.

13. An engine exhaust emission control device according to claim 12, wherein the first  
controller receives the addition device control signal and reduces the reducing agent addition  
amount corresponding to a reduction in the NO<sub>x</sub> emission amount related to the abnormality,  
and increases the reducing agent addition amount corresponding to an increase in the NO<sub>x</sub>  
emission amount related to the abnormality.

14. An engine exhaust emission control device according to claim 12, wherein the engine  
includes as the engine part, an exhaust gas recirculation device which recirculates exhaust gas  
to an intake air passage,

and the second controller detects as the abnormality, an abnormality occurring in the  
exhaust gas recirculation device.

15. An engine exhaust emission control device according to claim 12, wherein the engine  
includes as the engine part, a supercharger which compresses intake air,

and the second controller detects as the abnormality, an abnormality occurring in the supercharger.

16. An engine exhaust emission control device according to either one of claim 1 and claim 12, wherein the NOx reducing agent is ammonia.

17. An engine exhaust emission control method, comprising the steps of:  
providing an addition device for adding a NOx reducing agent to exhaust gas of an engine, and promoting reduction of NOx using the added reducing agent, and  
detecting an abnormality occurring in the addition device, and at the time of a first abnormality occurrence when the occurrence of this abnormality is detected, manipulating an engine control factor that influences the composition of exhaust gas at the point in time of emission from a cylinder, and reducing a NOx emission amount of the engine than that at normal times, other than at the time of the first abnormality occurrence, under the same operating conditions of the engine.

18. An engine exhaust emission control method, comprising the steps of:  
providing an addition device for adding a NOx reducing agent to exhaust gas of an engine, and promoting reduction of NOx using the added reducing agent, and  
detecting an abnormality occurring in an engine part that influences the composition of exhaust gas at the point in time of emission from a cylinder, and at the time of a second abnormality occurrence when the occurrence of this abnormality is detected, increasing or decreasing a reducing agent addition amount by the addition device than that at normal times,

other than at the time of the second abnormality occurrence, corresponding to modes of the abnormalities.

19. An engine exhaust emission control method, comprising the steps of:  
providing an addition device for adding a NO<sub>x</sub> reducing agent to exhaust gas of an engine, and  
adding the reducing agent in an amount corresponding to operating conditions of the engine by the addition device, and  
at the time of the occurrence of a first abnormality where an abnormality has occurred in the addition device, manipulating an engine control factor that influences the composition of exhaust gas at the point in time of emission from a cylinder, to reduce a NO<sub>x</sub> emission amount of the engine from that at normal times, and  
at the time of the occurrence of a second abnormality where an abnormality has occurred in an engine part for realizing the engine control factor, increasing or decreasing the reducing agent addition amount by the addition device than that at normal times, corresponding to modes of the abnormalities.